Violence Exposure Mediates the Relation between Callous-Unemotional Traits and Offending Patterns in Adolescents

Abstract

The link between callous-unemotional (CU) traits in youth and delinquent, aggressive and violent behavior has been well-replicated in the literature. However, the mediating effects of violence exposure on this relationship are unclear. The current study addresses this important gap in the literature with a sample of 88 detained, primarily ethnic minority adolescent males (*M* age = 15.57; *SD* = 1.28). Results indicate that a history of violence exposure, and specifically witnessed violence, significantly mediates the association between CU traits and violent delinquency. Furthermore, exposure to violence—both direct victimization and witnessed violence—fully mediates the association between CU traits and drug delinquency. These findings suggest that (a) the well-established link between CU traits and violence may be attributed to high rates of witnessed violence among this subpopulation, and (b) specific types of violence exposure may be important for predicting the offending patterns of youth high on CU traits. Theoretical and practical implications are discussed.

Keywords: juvenile offenders; callous-unemotional traits; violence; exposure to violence; victimization; substance abuse; property crime

Violence Exposure Mediates the Relation between Callous-Unemotional Traits and Offending Patterns in Adolescents

Callous-unemotional (CU) traits—theorized to be the childhood manifestation of adult psychopathy—distinguish a subset of youth with conduct problems who are characterized by a lack of remorse and empathy, uncaring behaviors, and an inability to express emotion (Christian, Frick, Hill, Tyler, & Frazier, 1997; Frick, 2006; Frick, Bodin, & Barry, 2000). Several studies find that CU traits are moderately stable from late childhood to early adolescence (Frick, Kimonis, Dandreaux, & Farrell, 2003; Munoz & Frick, 2007), and from adolescence to adulthood (Lynam, Caspi, Moffitt, Loeber, & Stouthamer-Loeber, 2007; Lynam, Miller, Vachon, Loeber, & Stouthamer-Loeber, 2009). Compared with youth low on CU traits, antisocial youth high on CU traits present with a particularly severe and stable pattern of conduct problems and delinquent behavior (Frick, Cornell, Barry, Bodin & Dane, 2003; Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005; Loney, Taylor, Butler, & Iacono, 2007), tend to show greater substance-related delinquency (Taylor & Lang, 2006), and show higher rates of aggression, and violent and sexual offending (Caputo, Frick, & Brodsky, 1999; Frick & White, 2008). In their review of 24 published studies, Frick and Dickens (2006) found consistent support for an association between CU traits and more severe conduct problems, delinquency, violence and aggression. Antisocial youth scoring high on CU traits also show different risk factors and correlates compared to youth scoring low, such as greater thrill-seeking and a reward dominant response style (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999), insensitivity to punishment (see Frick & White, 2008) and poor recognition of and attention to others' distress cues (Blair, 1999; Kimonis, Frick, Fazekas, & Loney, 2006), suggestive of a divergent developmental pathway to their antisocial behavior (Frick, 2009).

Although much research attempting to understand the developmental origins of CU traits focus on biological-temperamental factors—with compelling evidence suggesting a genetic basis (Larson, Andershed, & Lichtenstein, 2006; Taylor, Loney, Bobadilla, Iacono, & McGue, 2003; Viding, Jones, Paul, Moffit, & Plomin, 2008)—there is a resurgence of interest in environmental factors associated with callous-unemotional traits and psychopathy. For example, Porter (1996) theorized that a secondary variant of psychopathy develops due to the "deactivation" of a developing affective conscience through a dissociative process, following trauma exposure such as abuse or maltreatment. In contrast, the primary variant of psychopathy is theorized to be born without the ability to form affective bonds. In the mid twentieth century, Karpman (1941) theorized that there existed a trauma-based

etiological pathway to psychopathic personality. Several studies have since documented a link between psychopathic traits and childhood trauma. For example, in their seminal longitudinal study of 652 young adults, Weiler and Widom (1996) found that individuals with a legally documented history of childhood abuse/neglect were significantly more likely than a matched control sample of 489 individuals without a documented history of maltreatment to develop psychopathic traits and violent behavior approximately 20 years later (see also Bernstein, Stein, & Handelsman, 1998; Campbell, Porter, & Santor, 2004; Krischer & Sevecke, 2008). Similarly, developmental research indicates that trauma exposure (abuse, neglect) during toddlerhood is associated with early affective deficits consistent with CU traits, namely a lack of empathy and concern for others (Main & George, 1985).

Beyond direct victimization, there also appears to be a significant link between CU traits and exposure to witnessed violence. In a prior investigation with the present sample, Kimonis, Frick, Munoz, & Aucoin (2008) found that exposure to community violence was significantly positively associated with CU traits (r = .38). Some researchers suggest that chronic exposure to violence affects the normative development of empathy and morality, resulting in an uncaring and callous personality (Farrell & Bruce, 1997; Fitzpatrick, 1993). While chronic exposure to violence is likely to lead to desensitization to others' distress cues, a deficit common to youth with CU traits, an alternative possibility is that the thrill and novelty seeking tendencies of these youth (Frick et al., 1999) increases their likelihood for entering into situations that place them at risk for exposure to dangerous and violent experiences as witnesses (Kimonis et al., 2008).

Thus, research suggests CU traits are associated with both a) more severe and violent offending and b) greater rates of direct victimization and exposure to violence. What has not been the focus of much research is whether or not the victimization and exposure to violence accounts for the offending patterns in those with CU traits. Specifically, exposure to violence is an important risk factor for aggressive and violent behavior. Social learning theory suggests that it plays a significant role in shaping the integration and transmission of violent behavior (Bandura, 1977; Widom, 1989). This viewpoint suggests that if a youth witnesses or experiences violent acts, they are in turn more likely to later engage in violence. Consistent with this theory, past research finds that a history of childhood abuse and witnessing of severe violence is associated with later violent and sexual behavior (Caputo, Frick, & Brodsky, 1999). Thus, it is possible that violence exposure could mediate the well-established link between CU traits and violent offending.

Youth who are directly victimized or exposed to witnessed violence are also more likely to engage in drug delinquency (Mrug & Windle, 2009; Simpson, 2002). It has been suggested that ongoing exposure to stress or traumatic abuse increases susceptibility to substance abuse (Breslau, Davis, & Schultz, 2003; Piazza & Le Moal, 1996; Simpson & Miller, 2002). One explanation is that the anxiety-reducing effects of substances, which alter the brain's behavioral inhibition system (Walker et al., 1991) and affect reward systems of the brain (e.g. amygdala, nucleus accumbens; Volkow & Fowler, 2000), may serve to numb feelings of emotional distress associated with traumatic events. There is also a well-established relationship between psychopathic traits and substance abuse. For example, individuals with secondary psychopathy, which is associated with trauma exposure as detailed above, consistently show high rates of substance abuse pathology (Blackburn & Coid, 1998; Skeem, Johansson, Andershed, Kerr, & Louden, 2007; Smith & Newman, 1990; Vassileva, Kosson, Abramowitz, & Conrod, 2005). Thus, it is possible that victimization and exposure to violence could also explain the association between CU traits and drug offenses.

The Present Study

Despite the established link between CU traits and delinquency, there has been relatively little study of potential mediating factors between them, such as violence exposure, which may offer important theoretical insights. While environmental factors may be less associated with the underlying cause of CU traits (Viding et al., 2008), they may be helpful for understanding the mechanisms by which these youth come to engage in distinct patterns of offending. The present study moves the field forward by addressing the possible mediating effects of victimization and violence exposure on CU traits and patterns of delinquency. The primary aims of the present study were to test whether violence exposure (a) accounts for the association between CU traits and violent forms of delinquency, including sexual delinquency and (b) also mediates the link between CU traits and drug delinquency. With regard to property delinquency, it was predicted that the direct link with CU traits would not be mediated by violence exposure. An exploratory aim was to examine the relative contributions of both witnessed and direct victimization to these mediating processes.

Method

Participants

Participants included 88 male adolescents between the ages of 13 and 18 (M = 15.57; SD = 1.28) detained in a juvenile detention center for youth who have committed a variety of delinquent acts. The participants were a

subset of 102 males who provided assent to participate and whose parents also provided consent. Thirteen males were excluded from the study because they showed impaired verbal abilities (scores below 66) on the Peabody Picture Vocabulary Test-Third Edition (PPVT-III; Dunn & Dunn, 1997), making it unclear if they could understand the study questionnaires and another was unable to complete questionnaires. The mean PPVT score of the final sample fell approximately one standard deviation below average at 85.6 (*SD* = 13.5).

The majority (68%) of the sample self-identified as African American and 23% as Caucasian, which is representative of the broader ethnic composition of the detention center population. The most common family structure reported by participants was living with a biological mother alone (45%), followed by living with a biological mother and step-father (25%), living with both biological parents (8%), living with a biological father and step-mother (8%), living with a biological father alone (5%), and other living arrangements (5%). Participants reported an average of 2.75 (*SD*=1.38) siblings living in the home with them prior to being detained. Based on self-report, 17% were prescribed psychotropic medication, 50% were placed in special education classes in school, and 69% had a history of mental health treatment. According to a review of their detention center records, 59% of youth had either a current arrest for a violent offense or a history of at least one violent arrest and the sample had an average of 6.08 (*SD*=5.57, Range = 0 - 28) previous arrests.

Procedures

All procedures were approved by a university Institutional Review Board. A staff member from the detention center contacted the parents or legal guardians of all detained youth to inform them of a study being conducted at a local university and to ask their permission to forward their contact information to the researchers. Of the 126 parents contacted, nine parents declined their child's participation. Researchers met with the remaining youth in a private room at the detention center to request their assent to participate; ten youth declined participation. Five additional youth were released from the facility before assent could be obtained.

Youth participating in the study were individually administered a demographic interview followed by a questionnaire requiring him to report on his ethnicity. The youth then completed the computerized emotional pictures dot-probe task described below, followed by the PPVT-III (Dunn & Dunn, 1997). Later in the day, and at least half an hour following the initial session, boys were escorted in groups to a larger visitor's room (groups ranged from one to four youth), where they were read questionnaires by a researcher, with an assistant available to help answer participant questions and to ensure that each participant was working independently and completed

every item. The group was compensated for their participation with a choice of refreshment (i.e., soft drink and candy bar).

Measures

Callous-unemotional traits. CU traits were assessed using the 24-item *Inventory of Callous-Unemotional Traits* (ICU; Frick, 2004). Items (e.g., "I do not show my emotions to others") are rated on a 4-point Likert scale from 0 (not at all true) to 3 (definitely true). The construct validity of the ICU was supported in a large community sample (n = 1,443) of 13- to 18-year-old nonreferred German adolescents (774 boys and 669 girls; Essau, Sasagawa, & Frick, 2006), as well as an American sample (n = 248) of male and female juvenile offenders (188 boys, 60 girls) between the ages of 12 and 20 (Kimonis, Frick, Skeem, et al., 2008; see also Fanti, Frick, & Georgiou, 2009). Specifically, the total scale showed predicted associations with aggression, delinquency, personality traits (e.g., sensation seeking, Big Five dimensions), psychophysiology, and psychosocial impairment (Essau et al., 2006; Kimonis, Frick, Skeem, et al., 2008). Consistent with these past studies, items 2 and 10 from the ICU were deleted because of low corrected item-total correlations. The remaining 22 items were summed for a total score. Descriptive statistics and internal consistencies for all measures are reported in Table 1.

Exposure to violence. Children's self-reported exposure to community violence was assessed using the Children's Report of Exposure to Violence-Revised (CREV-R: Cooley, Turner, & Beidel, 1995). The CREV-R is a 33-item scale that assesses exposure to violence, including such situations as being robbed or mugged, stabbed, or killed. For the first 29 items, youth rate the frequency of their exposure to violence on a 5-point Likert scale from 0 (never) to 4 (every day). The CREV also includes four open-ended questions for youth to indicate whether they have ever been exposed to other types of violent acts not listed. The youth's lifetime total exposure to violence score was used in the current study by summing all of the 29 rated items. Also, the ten-item witnessed violence scale (e.g., seeing a stranger beaten up) and the four-item violent victimization scales (e.g., being beaten up or shot) were computed for the present study. The CREV has demonstrated good internal consistency ($\alpha = .78$) and 2-week test–retest reliability ($r = .75$), and has been used in research with high-risk African American youth between the ages of 9 and 15 (i.e., Cooley et al., 1995; Cooley-Quille et al., 2001).

In the current study the total exposure to violence score ranged from 13 to 92 with a mean of 46.64 (SD = 17.04), which is consistent with findings from a community sample of inner-city high school students (M = 52.03,

SD = 16.21; Cooley-Quille et al., 2001). The total CREV, witnessed violence and violent victimization scales demonstrated good internal consistency in the current detained sample (see Table 1).

Delinquency. Delinquency was measured using the *Self-Reported Delinquency Scale* (SRD; Elliot & Ageton, 1980). The SRD scale assesses the number of crimes committed by the youth by listing 36 questions about illegal juvenile acts selected from a list of all offenses reported in the Uniform Crime Report with a juvenile base rate of greater than 1% (Elliott & Huizinga, 1984). For each question the youth is asked to respond with a "yes" or "no" regarding whether he has ever done the behavior. The current study used the 8-item violent offenses subscale (e.g., "have you ever been involved in gang fights?"), 7-item property offenses subscale (e.g. "have you ever purposely damaged or destroyed property belonging to school?"), and the 9-item drug offenses subscale (e.g. "have you ever sold hard drugs such as heroin, cocaine, and LSD?"). Given the small number of items included in the SRD assessing sexual delinquency (n = 2), a dichotomous variable was computed by coding an endorsement of either item or a history of sexual offending reported in the youth's institutional file as present ("1") and no such endorsement as not present ("0"). To account for this dichotomous variable in the model, we used weighted least-squares with mean and variance (WLSMV) estimation (Muthén, DuToit, and Spisic, 1997). Internal consistencies for the continuous delinquency scales are reported in Table 1.

Results

Prior to addressing the study aims, the correlations among the main study variables were examined (see Table 1). CU traits were significantly positively correlated with total, direct, and witnessed violence exposure, as well as violent, property, and drug delinquency. CU traits were not significantly associated with sexual delinquency, thus not meeting the necessary preconditions for mediation (MacKinnon, 2008). However, we retained this variable in the models tested, given its significant association with violence exposure.

Primary Aims: Does Exposure to Violence Mediate the Associations between CU Traits and Violent, Sexual and Drug—but not Property—Delinquency?

In the current study, we tested for mediation within a structural equation modeling (SEM) framework. Mediation is established when the following conditions are met: (a) the independent variable (X: CU traits) must relate significantly to the dependent variables (Y: delinquency types). To test this direct effect we fit a simple SEM model that specified CU traits (X) statistically predicting the dependent variable of interest (Y); (b) X must relate significantly to the mediator (violence exposure); (c) The mediator must relate significantly to Y when X is

controlled; (d) The direct effect must become nonsignificant (full mediation) or reduced in significance (partial mediation) when the effect of the mediator is controlled (MacKinnon, 2008).

All models were tested using Mplus 6 (Muthen & Muthen, 2003). WLSMV estimation was used as the model included the dichotomous sexual delinquency variable. The indirect paths between CU traits and delinquency types through exposure to violence (mediator) were tested using the MODEL INDIRECT/ VIA commands in Mplus. We assessed quality of model fit using multiple indices, as each index has limitations (Kline, 1998; MacCallum & Austin, 2000) and there is no consensus criterion for evaluating model fit. Different aspects of fit were evaluated, including absolute fit (χ^2) and fit relative to a null model (Comparative Fit Index, or CFI, and root mean square error of approximation, or RMSEA). Following convention, the criterion for adequate fit was defined as CFI > .90 or .95 and RMSEA < .08 or .06 (Byrne, 1994; Hu & Bentler, 1999, respectively).

As depicted in Figure 1, we fit a path model with CU traits (X) predicting property, drug, violent and sexual delinquency, with total exposure to violence specified as a mediator (χ^2 = 1.58, *df* = 2, *n.s.*, CFI = 1.00, RMSEA = 0.00). Applying MacKinnon's (2008) guidelines, we deleted all non-significant paths to create a more parsimonious model. There was support for full mediation of CU traits on violent delinquency by exposure to violence. Specifically, (a) there was a significant indirect effect between CU traits and violent delinquency through violence exposure (indirect, $\beta = .16$, $p < .01$) and (b) a reduction of the direct effect of CU traits on violent delinquency to nonsignificance (from $\beta = .28$, $p < .05$ in the first model to $\beta = .12$, $p = .24$ in the second model above). Additionally, there was support for partial mediation of CU traits on drug delinquency via violence exposure. Specifically, (a) there was a significant indirect effect between CU traits and drug delinquency through violence exposure (indirect, $\beta = .13$, $p < .05$) and (b) a reduction of the direct effect of CU traits on drug delinquency to indicate decreased significance (from $\beta = .35$, $p < .01$ in the first model to $\beta = .23$, $p < .05$ in the second model above).

Second Exploratory Aim: Do Direct Victimization and Witnessed Exposure to Violence Mediate the Associations between CU Traits and Types of Delinquency?

Our second aim focused specifically on exploring the relative contribution of types of violence exposure to mediating the CU-delinquency link. We fit a path model with CU traits (X) predicting drug, violent, property, and sexual delinquency, with direct and witnessed exposure to violence specified as separate mediators (χ^2 = 13.02, *df* = 6, $p < .001$, CFI = .90, RMSEA = .12). Again, we deleted all non-significant paths to create a more parsimonious

model (MacKinnon, 2008). We found support for full mediation of CU traits on violent delinquency by exposure to witnessed violence. Specifically, (a) there was a significant indirect effect between CU traits and violent delinquency through witnessed violence exposure (indirect, $\beta = .11$, $p < .05$) and (b) a reduction of the direct effect of CU traits on violent delinquency to nonsignificance (from $\beta = .24$ $p < .05$ in the first model to $\beta = .07$, $p = .54$ in the second model above).

Additionally, there was support for full mediation of CU traits on drug delinquency by exposure to both direct and witnessed violence. Specifically, (a) there was a significant indirect effect between CU traits and drug delinquency through direct violence exposure (indirect, $\beta = .11$, $p < .05$) and (b) a reduction of the direct effect of CU traits on drug delinquency to nonsignificance (from $\beta = .33$ $p < .01$ in the first model to $\beta = .13$, $p = .24$ in the second model above). Furthermore, (a) there was a significant indirect effect between CU traits and drug delinquency through witnessed violence exposure (indirect, $\beta = .10$, $p < .05$) and (b) a reduction of the direct effect of CU traits on drug delinquency to nonsignificance (from $\beta = .33$ $p < .01$ in the first model to $\beta = .13$, $p = .24$ in the second model above).

Discussion

The current study contributes several key findings for improving our understanding of the effects of violence exposure on offending patterns in incarcerated boys high on CU traits. First, in line with our hypothesis, exposure to violence fully mediated the relationship between CU traits (i.e., lack of remorse and empathy, uncaring, unemotional) and violent delinquency. Moreover, this pattern of mediation was accounted for by exposure to *witnessed* violence, but not violent victimization. Second, exposure to violence, both direct and witnessed forms, also mediated the relationship between CU traits and drug delinquency. However, CU traits contributed unique variance to the statistical prediction of drug, as well as property delinquency, beyond the effects of violence exposure. Third, exposure to witnessed violence—but not direct victimization—was associated with sexual delinquency. These findings are discussed in turn below.

Exposure to Violence Mediates the Link between CU Traits and Violent Delinquency

In support of our hypothesis, the well-established link between CU traits and violence reported in several prior studies (e.g., Caputo, Frick, & Brodsky, 1999; Frick & Dickens, 2006; Frick & White, 2008) was fully accounted for by a history of violence exposure in our sample of ethnically diverse detained boys. Furthermore, this pattern of mediation was driven by exposure to witnessed forms of violence. That is, boys who were high on CU traits tended

to commit violent acts if they had witnessed violence around them. Witnessing violence perpetrated by others may lead youth to model such behaviors through a social learning process (Bandura, 1977; Widom, 1989). CU traits are relevant to this process in that these youth may be at even greater risk for engaging in violence given that they are also prone to deficits in empathy (Frick, 2006; Frick, Barry, & Bodin, 2000), are less affected by the negative consequences of their aggressive behavior, such as the victim's distress (Pardini, Lochman, & Frick, 2003), and are less emotionally engaged by or physiologically responsive to such cues (Blair, 1999; Kimonis et al., 2006; 2008). Importantly, these dispositional differences are also used to argue for divergent developmental processes relative to antisocial youth scoring low on CU traits and likely explain the more severe and persistent violence that youth high on CU traits display (Frick et al., 2003; Frick et al., 2005; Loney et al., 2007).

These findings are disconcerting given prior findings suggesting that youth high on CU traits report greater exposure to stressful life events, and particularly witnessing violence done to others (Kimonis et al., 2008). At least some researchers suggest that youth high on CU traits may be exposed to more stressful life events because they are more thrill and adventure seeking (Frick et al., 1999). Children high on CU traits, who are insensitive to punishment, also undermine parenting practices to evoke more harsh, inconsistent, and punitive discipline (Hawes, 2011), placing them at risk for witnessing and becoming the victim of violence in the home. Similarly, a child who is emotionally unresponsive may lead the parent to disengage over time, resulting in reduced levels of parental warmth and rejection, or neglect at its extreme (Muñoz, Pakalniskiene, & Frick, 2011). Consistent with this notion, research documents an association between psychopathic traits and neglect (Weiler & Widom, 1996). This transactional process can be particularly damaging given findings that CU traits and antisocial behavior increased one year later as reported parental warmth and involvement decreased (Pardini, Lochman, & Frick, 2003). Although intervention research with this population is scant, to date, the most effective intervention for young children high on CU traits fosters greater attachment security and parental warmth, resulting in reduced oppositional symptoms up to six months later (Hawes & Dadds, 2007).

Exposure to Violence Mediates the Link between CU Traits and Drug Delinquency

Our findings suggest that youth high on CU traits are more likely to engage in drug-related delinquency consistent with prior research (Wareham et al, 2009), and this association is partially attributable to their exposure to witnessed violence and direct victimization. The likelihood of engaging in drug delinquency among those high on CU traits may also be partially due to an increased propensity toward high-risk, thrill-and-adventure seeking

behaviors (Frick et al., 1999). Youth with CU traits also tend to be highly reward-sensitive (Frick et al., 1999), leading them to seek out substances regardless of their environmental context. The association between violence exposure and drug use or related legal issues is often explained by the self-medication hypothesis, stating that the emotional sequelae of a traumatic event leads to subsequent substance use as a method of relieving painful symptoms or memories (Brown & Wolfe, 1994; Khantzian, 1985; Stewart, 1996). This process may help explain drug abuse among those who are both directly exposed to aggression through physical abuse or neglect and those who witness severe violence in the family or community; thus, the association is strengthened among CU individuals, who may be already susceptible to drug problems, particularly for this detained sample of boys.

Exposure to Violence is Associated with Sexual Delinquency

In the present study, we found a significant association between sexual delinquency and exposure to witnessed violence ($r = .35$, $p < .05$), but not direct victimization. This finding is consistent with prior research indicating that witnessing of severe domestic violence is related to juvenile sexual offending, as well as nonsexual violent offending (Caputo, et al., 1999; Haapasalo & Hamalainen, 1996; SpaccarelIi, Bowden, Coatsworth & Kim, 1997). Some authors suggest that youth exposed to violence, particularly domestic violence, come to develop a poor sense of interpersonal boundaries and attitudes supportive of violence, which places them at risk for sexually violent behavior (Spaccarelli, Coatsworth, & Bowden, 1995). Our finding that CU traits were not associated with sexual delinquency contradicts prior research reporting greater sexual offending among youth high on CU traits, namely increased number of sexual offense victims and premeditated violent sexual behavior (Caputo, et al., 1999; Lawing, Frick, & Cruise, 2010). However, it is important to consider that our dichotomous measure of sexual delinquency was a limitation to our study given that it was based on either the youth's endorsement of engaging in sexual relations in exchange for payment or against an individual's will, or on a past or current sexual offense in the youth's institutional file.

In the process of interpreting our findings, some additional limitations beyond our measure of sexual delinquency must also be taken into consideration. First, the cross-sectional study design prevents any causal inferences regarding the study findings. In addition to examining whether exposure to violence mediates the relationship between CU traits and specific delinquency types, we also reversed the model to specify violence exposure as the IV and CU as the moderator (Caputo, et al., 1999); however, mediation analyses were not significant. Future longitudinal research is needed to gain clarity on the temporal ordering of these variables to

better ascertain causality and resolve the important question of whether early stress and trauma (e.g., violence exposure) leads to the development of CU traits through a desensitization process as Porter (1996) and Karpman (1941) hypothesize, or whether youth high on CU traits elicit more stressors in their environments (Kimonis et al., 2008), or both. Second, our measure of violence exposure did not allow us to differentiate between specific types of violence exposure beyond those that are directly experienced by the youth first-hand or witnessed acts of violence perpetrated by others. Future research may wish to explore the mediating effects of physical, sexual, or emotional abuse or neglect. We were also unable to distinguish between witnessing of domestic versus community violence, preventing any firm conclusions regarding the relevance of the proximity of witnessed violence to outcomes of interest. Third, the current detained sample consisted primarily of African-American boys. Although this allowed us to examine the importance of violence exposure in the association between CU traits and types of delinquency in an understudied group at greater risk for violence exposure, it also limits the generalizability of our findings to other populations, such as community youth and girls.

Despite these limitations, the results of the present study emphasize the importance of considering the environmental contexts of incarcerated youth high on CU traits. Youth characterized by a lack of remorse and empathy, uncaring behaviors, and an inability to express emotion are at greater risk for antisocial and aggressive behavior and our findings suggest that a history of violence exposure may be important for explaining this risk. Our findings suggest that if the home or neighborhood environments of youth with CU traits model violence these youth will likely channel their antisocial tendencies into violent acts. They may also choose to cope with their stressful life experiences by engaging in substance abuse, particularly when they have been the direct victim of a violent act. If not, they will likely channel their antisocial tendencies into nonviolent acts of property delinquency, such as vandalism and theft.

Overall, these results support the need for further research regarding contextual factors that contribute to the development of delinquent behavior among youth with CU traits, who are at risk for severe conduct problems. Such research has important implications for improving developmental models that detail specific pathways leading to the development of conduct problems and delinquency in youth. These results also have important implications for identifying specific groups of youth that may be more susceptible to trauma exposure, and in turn, more severe offending patterns. For example, low socioeconomic status is consistently documented as a correlate to violence exposure (Gerwirtz & Edleson, 2007; Lee, Kotch, & Cox, 2004) and is found to predict a more stable course of

conduct problems among youth with CU traits (Frick & Dantagnan, 2005). Taking such factors into account may also assist in planning and tailoring treatment to the unique needs of CU youth who have different processes leading to their development of specific types of delinquency. Lastly, given that our results suggest that both violence exposure and CU traits contribute to delinquency, interventions that focus solely on individual personality traits or psychosocial risk factors are likely to be limited in effectiveness. Given the substantial rate of delinquent or violent behavior often displayed by youth with CU traits, the development of more comprehensive risk assessments and interventions is crucial to violence and crime prevention efforts (Frick, 2009).

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Tables & Figures

Table 1. *Descriptive Statistics and Zero-order Correlations among Main Study Variables*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. CU Traits	-	.38**	.28**	.34**	.05	.24*	.32**	.33**
2. Total ETV	-	-	.53**	.91**	.29**	.49**	.22*	.43*
3. Violent victimization	-	-	-	.43**	.02	.24*	.18	.44**
4. Witnessed ETV	-	-	-	-	.25*	.37**	.12	.36**
5. Sexual Delinquency	-	-	-	-	-	.05	.09	.03
6. Violent Delinquency	-	-	-	-	-	-	.47**	.39**
7. Property Delinquency	-	-	-	-	-	-	-	.50**
8. Drug Delinquency	-	-	-	-	-	-	-	-
Descriptives								
Mean	23.23	46.64	2.83	11.80	0.17	2.49	4.68	3.28
SD	(7.85)	(17.04)	(2.09)	(7.93)	(.38)	(1.67)	(2.67)	(2.49)
Range	1-41	13-92	0-9	0-32	0-1	0-7	0-10	0-9
Alpha	.73	.97	.62	.91	--	.62	.73	.82
Skewness	-.22	.16	.71	.58	1.78	.75	-.03	.27
Skewness S.E.	(.26)	(.26)	(.26)	(.26)	(.26)	(.26)	(.26)	(.26)
Kurtosis	-.04	-.51	.09	-.41	1.21	-.25	-1.07	-.96
Kurtosis S.E.	(.51)	(.51)	(.51)	(.51)	(.51)	(.51)	(.51)	(.51)

Note. * $p < .05$; ** $p < .01$; CU = Callous-unemotional traits; ETV = Exposure to violence. Sexual delinquency measured dichotomously (0=No; 1=Yes).

Figure 1. Path model predicting mediating effects of exposure to violence on types of delinquency. *Note.* * p < .05; ** p < .01; *** p <.001

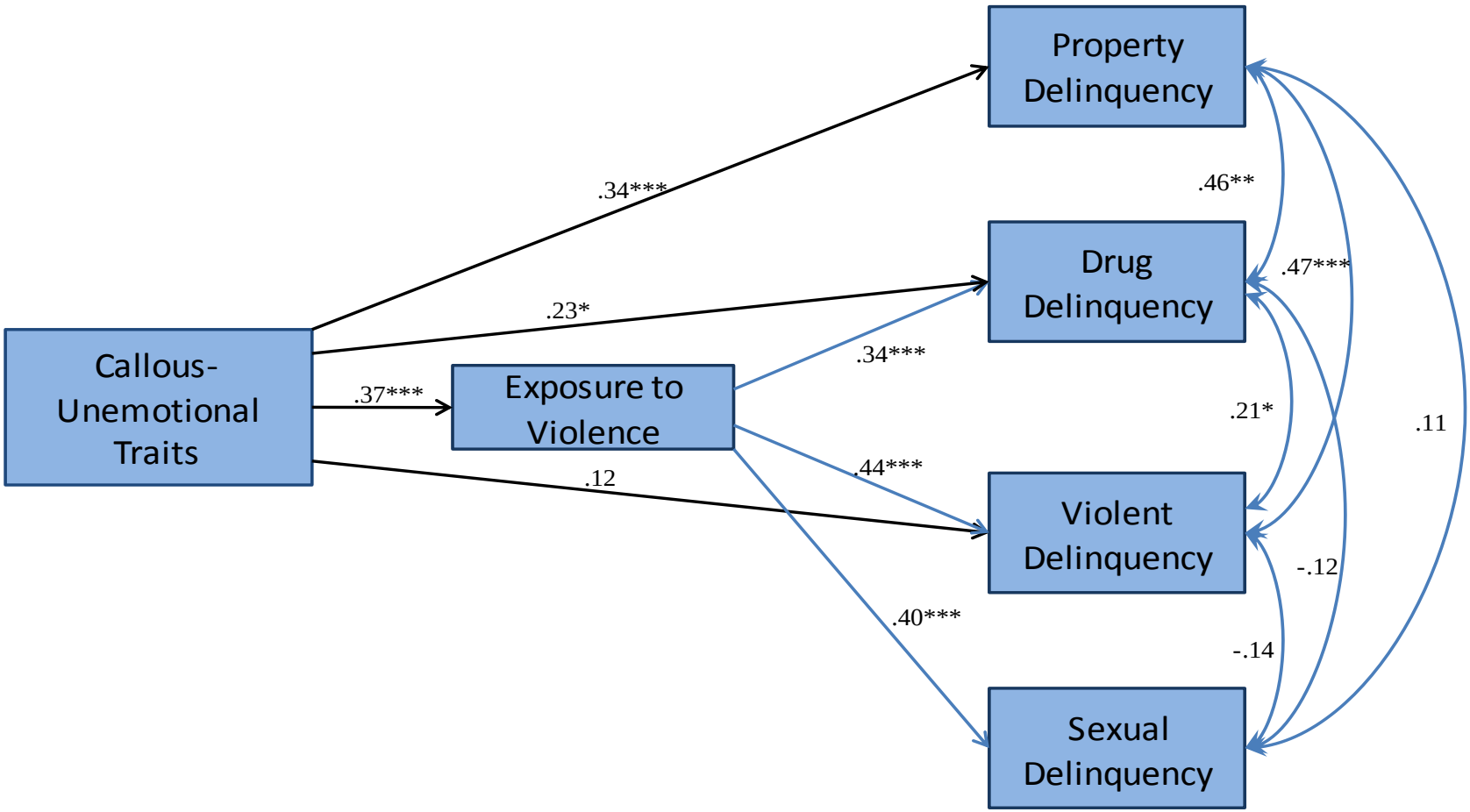

Figure 2. Path model predicting effects of callous-unemotional traits on types of delinquency with direct victimization and witnessed violence as mediators. *Note.* * p < .05; ** p < .01; *** p <.001